

REMOTE PANEL

User Guide

Installation and Operating Instructions



DECLARATION

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The manufacturer accepts no liability for any consequences resulting from inappropriate, negligent or incorrect installation, or adjustment of the optional operating parameters of the drive or from mismatching of the drive to the motor.

The contents of this User Guide are believed to be correct at the time of printing. In the interests of a commitment to a policy of continuous improvement, the manufacturer reserves the right to change the specification of the product or its performance or the contents of the User Guide without notice.

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SAFETY

The REMOTE PANEL is designed to be used in conjunction with the ACS250 variable speed drive. It is intended for professional incorporation into complete equipment or systems.

The ACS250 must be installed correctly to prevent a safety hazard. The ACS250 uses high voltages and currents, carries a high level of stored electrical energy, and is used to control mechanical plant that may cause injury. Close attention is required to system design and electrical installation to avoid hazards in either normal operation or in the event of equipment malfunction.

System design, installation, commissioning and maintenance must be carried out only by personnel who have the necessary training and experience. They must read carefully this safety information and the instructions in this and the ACS250 User Guides and follow all information regarding transport, storage, installation and use, including the specified environmental limitations.

Please read the **IMPORTANT SAFETY INFORMATION** below, and all **Warning** and **Caution** boxes within this document.

SAFETY NOTICES

WARNING is given where there is a hazard that could lead to injury or death of personnel.

CAUTION is given where there is a hazard that could lead to damage to equipment.

IMPORTANT SAFETY INFORMATION

Safety of machinery, and safety-critical applications

The level of integrity offered by the REMOTE PANEL / ACS250 control functions – for example stop/start, forward/reverse and maximum speed, is not sufficient for use in safety-critical applications without independent means of protection. All applications where malfunction could cause injury or loss of life must be subject to a risk assessment and further protection provided where needed.

Within the European Union, all machinery in which this product is used must comply with the Machinery Directive 2006/42/EC, Safety of Machinery. In particular, the equipment should comply with EN60204-1.

CONFORMITY WITH STANDARDS FOR ACS250

- CE-marked for Low Voltage Directive.
- EN61000-4 EMC Generic Emissions Standard, Industrial Level.
- EN61000-2 EMC Generic Immunity Standard, Industrial Level.
- Enclosure ingress protection, EN60529, NEMA 250.
- Flammability rating according to UL 94.

GENERAL SPECIFICATION

Compatible Drives: ACS250
Signal Interface: Standard 6-way RJ45 connector
Supply Input: 10V ... 36V DC, 30mA
RS485 signal: Industry standard 2-wire +5V differential
Environmental: Operational: 0 ... 50 °C
Storage: -40 °C ... 60 °C
Relative Humidity < 95% (non condensing)
Protection rating: IP54
Max cable length: 20m (unscreened, total length)
100m (screened, twisted pair, total length)

MECHANICAL INSTALLATION

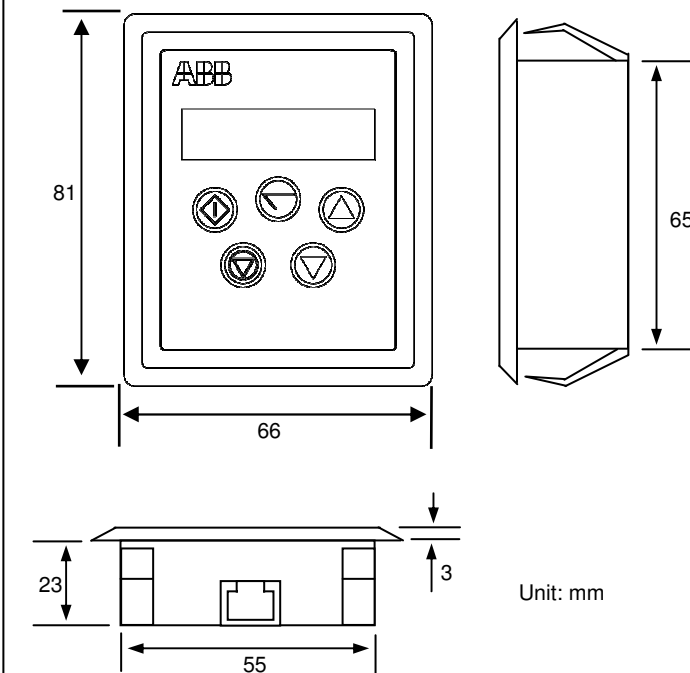
WARNING

- When installing the REMOTE PANEL, all ACS250 drives should be disconnected and **ISOLATED** before attempting any work. High voltages are present at the terminals and within the drive for up to 10 minutes after disconnection of the electrical supply. The ACS250 should be installed by qualified electrical persons and in accordance with local and national regulations and codes of practice.
- Refer to the relevant ACS250 user manual for further details.

CAUTION

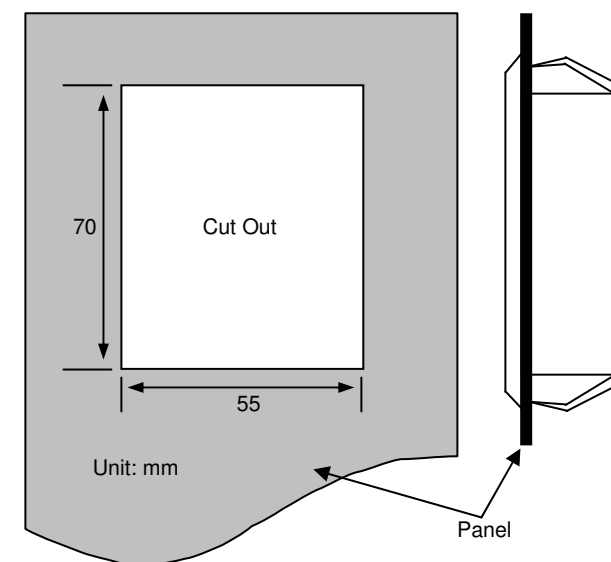
- Carefully inspect the REMOTE PANEL before installation to ensure it is undamaged.
- Store the REMOTE PANEL in its box until required. Storage should be clean and dry. Temperature range -40°C to +60°C.
- Install the REMOTE PANEL on a flat, flame-resistant vibration-free surface.
- Flammable material should not be placed close to the REMOTE PANEL.

DIMENSIONS



THROUGH PANEL MOUNT

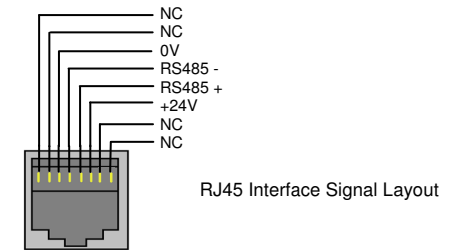
The surface on to which the REMOTE PANEL is to be mounted should be cut out in accordance with the diagram below.



ELECTRICAL INSTALLATION

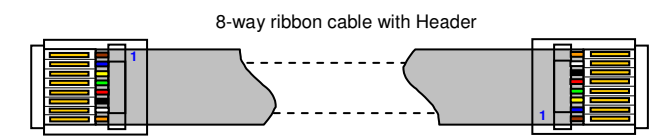
Electrical Interface

The REMOTE PANEL uses a standard RJ45 8-Way connector as its electrical interface, which provides a simple solution for the user to setup their system using a standard RJ45 8-Way data cable. The signal layout of the connector is as follows:



Cable Requirements

If the data cable is made up on site, ensure that the connection pin out is correct: Pin 1 to Pin 1, through Pin 8 to Pin 8.



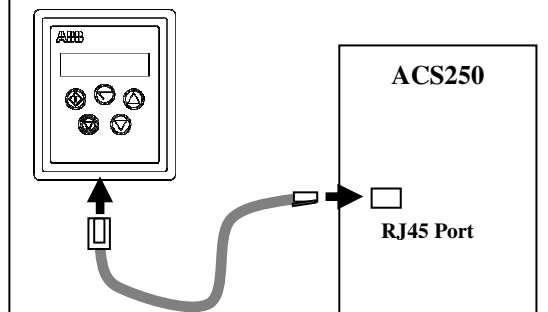
CAUTION

Incorrect cable connection may damage the drive. Extra care should be taken when using third party cable.

System Setup

The ACS250 provides the +24V power supply to the REMOTE PANEL via the RJ45 connection. Once the physical connection has been setup, the system is ready to operate. See picture below:

Note: The location of the RJ45 connector on the ACS250 will vary depending on the model.

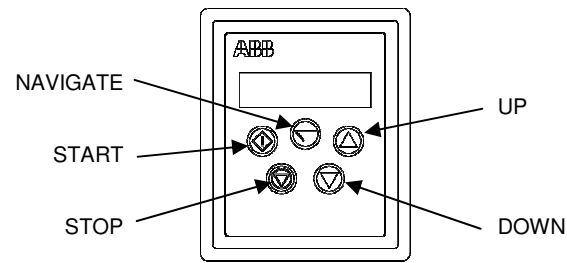


Electromagnetic Compatibility (EMC)

The ACS250 is designed to high standards of EMC. EMC data is provided in a separate EMC Data Sheet, available on request. Under extreme conditions, the product might cause or suffer disturbance due to electromagnetic interaction with other equipment. It is the responsibility of the installer to ensure that the equipment or system into which the product is incorporated complies with the EMC legislation of the country of use. Within the European Union, equipment into which this product is incorporated must comply with 89/336/EEC, Electromagnetic Compatibility.

When installed as recommended in the User Guide, the radiated emissions levels of the ACS250 is less than those defined in the Generic radiated emissions standard EN61000-6-4. The conducted emission levels are less than those defined in the Generic radiated emissions standard EN61000-6-4 (class A) for the specified motor cable lengths.

USER INTERFACE



NAVIGATE:

Used to display real-time information, to access and exit parameter edit mode and to store parameter changes

UP:

Used to increase speed in real-time mode or to increase parameter values in parameter edit mode

DOWN:

Used to decrease speed in real-time mode or to decrease parameter values in parameter edit mode

RESET / STOP:

When drive is in trip mode, this button is used to reset a tripped drive. In normal application, when in Keypad mode, this button is used to stop the drive when enabled and running.

START:

When in keypad mode, the button is used to start a stopped drive or to reverse the direction of rotation if bi-directional keypad mode is enabled (See ACS250 user guide for more information).

SYSTEM SETUP

Depending on the requirement of the application, the REMOTE PANEL can be used in the following different ways:

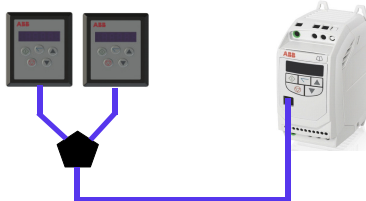
- One REMOTE PANEL with one ACS250



- One REMOTE PANEL with multiple ACS250's (up to 63 max)



- Two REMOTE PANELS with one ACS250



- Two REMOTE PANELS with multiple ACS250's (up to 63 max)



Different drive models can be used on the same REMOTE PANEL network providing a unique communications address is assigned to each.

EASY STARTUP

To setup the communication address

By default, the REMOTE PANEL will try to communicate with the drive that has address 1 in the network after powering up for the first time. The REMOTE PANEL will display "SCAN.." after power up, which indicates that the REMOTE PANEL is searching for the drive with the correct drive address in the network. Once the drive has been found, the message "Load.." will be displayed on the REMOTE PANEL display window, which indicates that the REMOTE PANEL is reading the configuration information from the drive. Usually it will take 1~2 seconds for the REMOTE PANEL to read this information. After the data has been loaded, REMOTE PANEL will display the drive real time status. If the REMOTE PANEL doesn't find the drive in the network, i.e. there is no drive in the network with address equal to 1, the REMOTE PANEL communication address will be displayed on the monitor window as "Adr-01". The user can then adjust the address from 1 to 63 by using the UP or DOWN buttons on the REMOTE PANEL. Once the address has been changed to a value to match that of the drive, the STOP button must be pressed to enable the REMOTE PANEL to search for the drive again.

Once the communication between REMOTE PANEL and drive has been set up, the user can change the REMOTE PANEL address to set up communication with another drive in the same drive network at anytime. Pressing the STOP and DOWN buttons together results in the message "Adr-XX", where "XX" represents the present address. Using the UP or DOWN button to select the desired drive address. After selecting the new address, pressing STOP and DOWN button together again will result in REMOTE PANEL establishing communications with the drive that has this address.

NOTE

For detailed parameter listing and functional setup, please refer to the corresponding ACS250 user guide

To setup REMOTE PANEL device number

The user can use a maximum of 2 REMOTE PANEL units within the same drive network to communicate with the same drive or different drives.

When using two REMOTE PANEL units with the same drive, the user needs to change the REMOTE PANEL Device Number on the second REMOTE PANEL to ensure correct operation. Device Number 1 is the default value.

To change the Device Number, press the NAVIGATE, STOP and DOWN buttons together. The message "Port-X" (x = 1 or 2) will be displayed. The User can then use the UP or DOWN buttons to change the REMOTE PANEL Device Number to 1 or 2 as required. Press NAVIGATE, STOP and DOWN button together again to return to normal operation.

Note:

- The REMOTE PANEL Device Address should only be changed to 2 if 2 REMOTE PANEL units are connected on a network.
- A REMOTE PANEL with Device Number 1 must always be present for the network to function correctly.

REAL TIME OPERATION

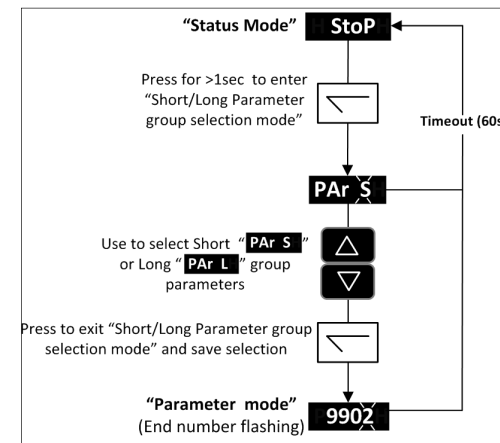
Once the communication has been setup between the drive and REMOTE PANEL, the user can control the ACS250 by using the control buttons on the front panel of the REMOTE PANEL.

To monitor or change a parameter value

- Press and hold the NAVIGATE key for more than 1s when the drive is displaying "StoP". The display changes to the first parameter in Short parameter group.
- Press and release the NAVIGATE key to display the value of the parameter to be edited.
- Change to the required value using the UP and DOWN keys.
- Press and release the NAVIGATE key once more to store the change.
- Press and hold the NAVIGATE key for more than 1s to return to real-time mode. The display shows "StoP" if the drive is stopped or the real-time information (e.g. speed, current or power) if the drive is running.

Locking access to the parameters

Ensure that the "Long Parameter mode (PAR L)" has been selected as shown below.



- Go to Parameter 1603 (Long Parameter group) and enter in your chosen parameter access code.
- Press the Navigate button to exit and parameter 1603 will then be hidden and all parameters will be "Read only" (except for Parameter 1602 which will remain "Read Write").
- Access to parameters via the REMOTE PANEL will now be prevented.

- Operational information (e.g. speed, current, power etc) can still be accessed as normal and the drive can still be controlled from the keypad.

Un-Locking access to the parameters

- Enter into Parameter 1602 the same value as 1603 (as chosen above).
- To disable this feature set parameter 1603 to zero and then parameter 1602 to zero.

Presetting target speed in keypad mode

Setting parameter 1103 to a value of 1 enables keypad mode with forward direction only, whilst a value of 2 enables keypad mode with forward and reverse rotation.

Set parameter 1100 to 1 or 3 to enable the drive to start from the preset speed.

Whilst the drive is stopped, press the STOP key. The value of the digital potentiometer will be displayed, indicating target speed. Use the UP and DOWN keys to select the required target speed.

Press the STOP key to return to the real time display showing "StoP", or the START key to start the drive ramping up to the target speed.

To vary the speed in real time in keypad control mode

Press the START key. The drive will ramp up to the preset speed set in the digital potentiometer (assuming parameter 1100 = 1).

Press UP to increase speed. The drive will run forward, increasing speed until the UP button is released. The maximum speed is the speed set in parameter 2008.

Press DOWN to decrease speed. The drive will decrease speed until the STOP button is released. The minimum speed is the speed set in parameter 2007.

Press the STOP key to stop the drive. The drive will decelerate to stop at the selected deceleration ramp. The display will finally show "StoP" at which point the drive is disabled.

Pressing the START key once more results in the drive running back up to the speed at which it was previously running (assuming 1100 = 1).

To reverse direction of rotation with Parameter 1103 = 2
Press the START key. The drive ramps up to the preset speed as set in the digital potentiometer (assuming Parameter 1100 = 1).

Press UP or DOWN to increase or decrease the speed.

Press the START key again. The motor will reverse its direction of rotation.

Press the STOP key to decelerate the motor to standstill.

Whenever the drive is started, it will start with a positive speed unless the direction is negated by the digital inputs on the user terminals.

BASIC DRIVE TRIP CODES

For a full list of codes and detailed troubleshooting information please refer to the drive User's manual

Message	Explanation
P-dEF	Default parameters have been loaded
F0001 h 0-1	Over current on drive output to motor
F0009	Drive overload trip.
F0004	Hardware Over-current/Internal power stage fault
F0002	Over voltage on DC bus
F0006	Under voltage on DC bus
0-t	Heatsink over temperature
U-t	Under temperature
F0018	Faulty thermistor on heatsink.
F0014	External trip on digital Input
F0010	Comms loss trip
F0022	Input phase loss trip
SP in-F	Spin start failed
F0027	Internal memory fault. Parameters not saved, defaults reloaded.
F0007	Analog input current out of range
RtF-__	Auto-tune failed error with error code

UNDERSTANDING THE DISPLAY MESSAGES

The REMOTE PANEL uses various display messages to indicate different working status. See the following table for more information.

Message	Explanation
SCAN..	The REMOTE PANEL is searching for the drive in the network.
LOAD..	The REMOTE PANEL has found the drive in the network and is loading the initialisation information from the drive.
Err-SC	The REMOTE PANEL has lost the communication link to the drive.
Adr-XX	Indicates the REMOTE PANEL address, where XX= 1...63
Port-X	This message shows the REMOTE PANEL device number X = 1 or 2

TROUBLE SHOOTING

Symptom	Explanation
'Adr-XX' displayed after 'SCAN..' message	REMOTE PANEL failed to find the drive with the specified address in the network. Check that the RJ45 data cable connection is correct. Check that the drive with address XX is available in the network. If XX > 1 and only one REMOTE PANEL is connected, then check the REMOTE PANEL device number, make sure the number is 1.
Display 'Err-id' on power up	This normally occurs when there are two REMOTE PANEL units in the same drive network and both of them have the same device number. Check and change the device number of one REMOTE PANEL.
Display 'Err-id' during normal operation	This normally occurs when the user plugs a second REMOTE PANEL into the drive network. Change the device number of one of the REMOTE PANEL units.
Display 'Err-SC'	Check the electrical connection, and make sure the cable is connected correctly between the REMOTE PANEL and the drive. Press 'STOP' button to enable the REMOTE PANEL to search for the drive again.



ABB Drives Ltd adopts a policy of continuous improvement and whilst every effort has been made to provide accurate and up to date information, the information contained in this manual should be used for guidance purposes only and does not form the part of any contract.

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